



# Rocket 7528D / Rocket 7528U

## PCIe Gen4 x16 to 4x SlimSAS NVMe RAID Adapter

### Ultra-Dense, High-Performance PCIe Gen4 2.5" NVMe RAID Solution for Professional Server & Workstation Applications

The Rocket 7528D/ Rocket 7528U 2nd Generation PCIe Gen4 NVMe RAID Adapter was designed for professional applications that require uncompromised Storage Performance with the flexibility of proven RAID technology and the industry's most comprehensive storage health Monitoring & Management suite. It can directly support up to eight 2.5" U.2 or U.3 NVMe SSDs via four SlimSAS SFF-8654 Ports and cable-to-backplane connectivity.

Hosted media can be configured into as many as 4 separate RAID 0, 1 or 10 arrays, including bootable volumes or mixed configurations of single SSDs and arrays. In addition, Rocket 7528D/ Rocket 7528U Adapters are Hot-Plug & Hot-Swap capable; administrators can easily add or remove RAID arrays and individual NVMe SSDs without rebooting the OS or powering down the host platform.

#### 48 Lanes of Dedicated PCIe Gen5 Bandwidth

HighPoint's High-Performance PCIe Gen4 switching architecture integrates Broadcom's 48-Channel PEX88048 switch IC to provide x16 lanes of dedicated PCIe Gen4 upstream bandwidth and x4 lanes of dedicated downstream bandwidth to each device channel. The innovative architecture enables the Rocket 7528D to deliver up to 32GB/s of transfer bandwidth, minimize latency, and facilitate consistent, robust I/O throughput.

The Architecture employs a technique known as a "Synthetic Hierarchy" to isolate the host system's OS from any PCIe topology changes. This enables the Rocket 7528D/ Rocket 7528U to directly manage resource allocation to the downstream PCIe channels and provide true Hot-Swap /Hot-Plug capability by facilitating a more efficient interaction between the host CPU and PCIe switch.

#### Engineered to Enhance the Efficiency & Serviceability of Datacenter & Server Applications

The Rocket 7528D / Rocket 7528U incorporates a wide range of features designed to enhance the efficiency of day-to-day operations of datacenter and Edge Server platforms. Each adapter has been built to the highest standards of quality and reliability, and is fully compliant with PCIe Card Electromechanical (CEM) specifications. Rocket 7528D / Rocket 7528U adapters are field replaceable units (FRU); the VPD stored on each adapter enables customers and service providers to easily procure replacements with the correct firmware/driver combination. The adapter's OOB (out-of-band) management capability is an essential component of professional server infrastructure. MBC & MCTP over PCIe enables an administrator to securely interface with the adapter without the need for internet access. The service is scalable and can be used to administrate multiple servers via Linux command prompts to manage storage in both Pre-OS and OS-level environments.

#### True NVMe Hot-Swap & Hot-Plug Capability

Rocket 7528D / Rocket 7528U adapters provide true NVMe SSD Hot-Swap & Hot-Plug capability; an essential feature for professional servers and datacenters. Administrators can safely add or remove individual SSDs or RAID arrays without rebooting the OS or powering down the host system.

The adapter utilizes Synthetic Hierarchy to isolate the host operating system from any PCIe topology changes (physical changes) and any events associated with the sudden addition or removal of an NVMe device. The adapter accomplishes this by creating virtual "placeholders" to reserve dedicated resources for each of the eight NVMe downstream ports whenever the system is booted. This technique ensures these channels remain active at all times. Adding an SSD will temporarily replace the corresponding placeholder. Likewise, removing an SSD will reactivate the corresponding placeholder.

#### PCIe Gen4 Hyper-Cooling Solution

The Rocket 7528D / Rocket 7528U's Low-Noise Hyper-Cooling solution combines the industry's most advanced PCIe Gen4 hardware cooling system with a suite of pro-active monitoring and management tools designed to keep temperatures in check under the most grueling working conditions. The adapter's passive, fan-less cooling system pairs copper piping with an aluminum heat exchanger for maximum thermal efficiency & durability. This Zero-Maintenance design is ideal Server & Data Center applications. SHI (Storage Health Inspector) enables administrators can instantly asses the operating status of hosted NVMe media via S.M.A.R.T. (self-monitoring and reporting technology), and customize temperature thresholds for each NVMe SSD.

#### Comprehensive Storage Health Monitoring, Management & Analysis Suite

Each adapter is equipped with HighPoint's intuitive yet comprehensive monitoring, management and analysis suite, which enables administrators to easily configure and maintain the platform's NVMe storage ecosystem with a few simple clicks and commands. SSDs and RAID 0, 1 and 10 arrays created and managed using these interfaces will be recognized as single, physical disks by the host platform, and can be used to install a bootable OS.

#### Intelligent, Self-Diagnostic LEDs

The Rocket 7528D / Rocket 7528U features built-In Early Warning LED Indicators. Simple color coding and flash-patterns enable administrators to instantly asses the operational status and condition of hosted SSDs and RAID arrays, the strength of the PCIe connection, and temperature of the PCIe switch hardware.

#### Feature Highlights

- 8-Dedicated PCIe 4.0 device channels
- Directly Supports up to 8x U.2/U.3 NVMe SSDs via 4x SlimSAS x8 (SFF-8654) Ports & industry standard backplane connectivity
- High-Performance 48-Lane Gen4 Switch Architecture: x16 lanes of dedicated upstream & x4 lanes of downstream bandwidth for each device channel
- Delivers 32GB/s of Bandwidth & Real-world Sustained transfer speeds up to 27,000MB/s
- Integrated NVMe Hot-Plug & Hot-Swap Capability
- PCIe Gen4 Hyper-Cooling Solution
- Comprehensive Storage Health Monitoring & Management Suite
- Industry-proven NVMe RAID Technology supports up to four RAID 0, 1 or 10 configurations
- Optional Boot-RAID Capability for Linux & Windows
- SafeStorage TCG SSD Solution
- TAA Compliance (Rocket 7528U)

Product Model	Rocket 7528D / Rocket 7528U		
<b>Hardware Features</b>			
Bus Interface	PCIe 4.0 x16		
Number of Channel / Port	8x Device Channels / 4x SlimSAS Ports (Dedicated PCIe 4.0 x8 per port)		
Connector Type	SlimSAS (SFF-8654 8x)		
Connector Pinout Definition	SFF-9402 Compliant		
Number of devices	8		
Data Port Reconfiguration (Downstream Configuration: 1x16 /2x8 /4x4 /8x2 /16x1 )	Yes		
SSD Form Factor	U.2, U.3		
External Power Support	No		
SRIS and REFCLK Support	TBA; please contact Sales for more information		
Downstream port containment	Yes		
Read tracking	Yes		
Synthetic Hierarchy	Yes		
LED Indication	Intelligent, Self-Diagnostic LEDs		
Audible Alarm	Yes		
FRU Support	Yes		
SSD Hot-Plug/Hot-Swap	Yes		
OOB Management	Yes (BMC and MCTP over PCIe)		
<b>Storage Security Suite</b>			
SED Support	SafeStorage OPAL SED Solution (Windows & Linux)		
<b>Backplane Features</b>			
UBM Support	Yes		
VPP Support	Yes		
<b>Mechanical Specifications</b>			
Form Factor	LP-MD2		
Card Dimensions	155mm x 68.9mm		
Card Weight	0.75 lbs.		
PCIe Bracket	Full-Height and Low-Profile Ventilated Brackets		
		Intelligent, Pro-Active PCIe Gen4 Cooling Solution <ul style="list-style-type: none"> <li>• Full-Length Aluminum Heatsink (Passive)</li> <li>• Copper piping</li> <li>• Compliant with PCIe Specifications</li> </ul>	
Toolless SSD mounting system		N/A	
<b>Supported Systems</b>			
OS (64-bit only)		Windows 11, 10 / Windows Server 2022, 2019, 2016 / Microsoft Hyper-V / RHEL, Debian, Ubuntu, Fedora, Proxmox & Rocky Linux (Linux kernel 3.10 and later)	
Secure Boot		Yes (Windows Only)	
<b>NVMe Configuration</b>			
RAID Support		Single, RAID 0, 1, 10	
TRIM RAID Support		Single, RAID 0, 1, 10	
<b>Storage Mode - NVMe</b>			
Data-RAID		Yes	
Boot-RAID		Yes	
<b>NVMe RAID Management</b>			
Management Suites		WebGUI (Browser-Based management tool), CLI (Command Line Interface - scriptable configuration tool), API package, UEFI HII	
SMTP Email Alert Notification		Yes	
Alarm Buzzer		Yes	
Storage Health Inspector		Yes	
NVMe SMART status		Yes	
Automatic and configurable RAID Rebuilding Priority		Yes	
Auto resume incomplete rebuilding after power on or reboot system		Yes	
Single-RAID or Multi-RAID Arrays per Controller		Yes	
Cross-Sync RAID Solution Across Controllers		Yes	
<b>Advanced RAID features</b>			
Online Array Roaming		Yes	
RAID Quick Initialization for fast array setup		Yes	
Global Hot Spare Disk support		Yes	

Operating Environment	
Working Temp.	+5°C ~ + 55°C
Storage Temp.	-20°C ~ +80°C
Operating Voltage	PCIe: 12V, 3.3V
Power	29.58W
MTBF (Mean Time Before Failure)	> 5,000,000 hours at 40° C

  

Kit Contents	
Kit Contents	1x NVMe RAID Adapter
	Low-Profile Ventilated Bracket
	QIG

  

Optional Accessories	
Cabling	TS8i-8639-060
	8654-8643-210
	8654-8611-205
	8654-8654-110
	8654-CIO8-110

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